DAVINCI MEDICAL ACADEMY

LAST MINUTE BOOSTER FOR:

NEET & FMGE (DECEMBER 2017)

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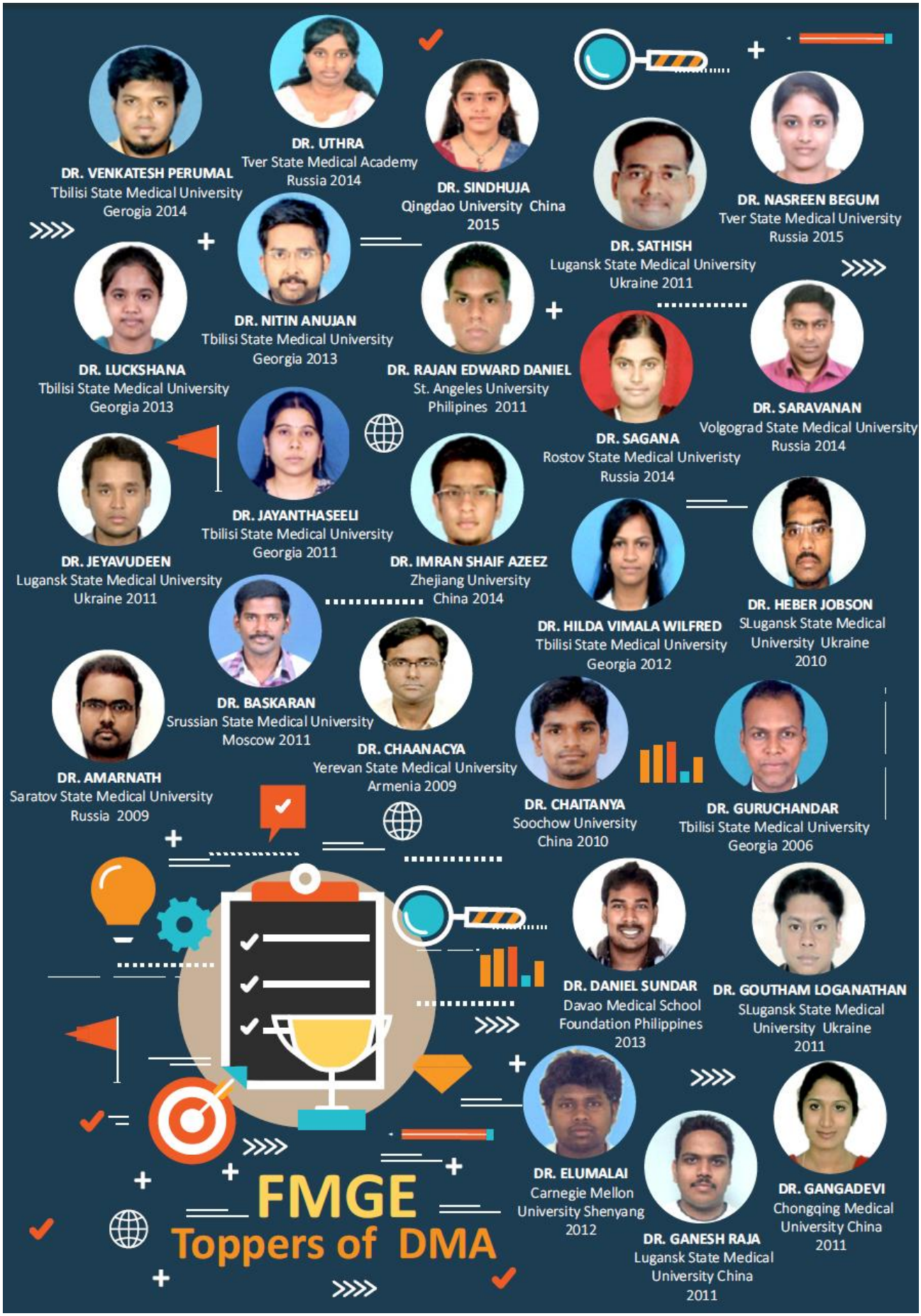
DMA'S LAST MINUTE REVISION FOR NEET/FMGE

DAVINCI MEDICAL ACADEMY



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DAVINCI MEDICAL ACADEMY

ANATOMY

1.END ARTERIES :
Central artery of Retina, Central branches of cerebral a., Vasa recta of mesenteric a. Arteries of spleen, l liver, kidney, lungs & metaphysis of long bone

2. **Importance of diaphysis:** TB & syphilis begin in it,strongest portion of bone, Haversian system +
3. **Importance of metaphysic :**
'Hair pin' bends of arteries.M/c site of **osteomyelitis** in children. Prone to **avascular necrosis.**
4. **Epiphyseal growth plate (Physis):** Plate of hyaline cartilage responsible for growth in length.
5. **Epiphysis:** Prone to traumatic necrosis, sepsis, and SCFE in children.
6. **Cartilage :** *have no vessels, no nerves (insensitive), no lymphatics.Contain anti-angiogenic factor*
7. **Capsule and Ligaments :** *Haver rich nerve supply(Sensitive to pain) and blood supply.*
8. **Ligament** *connects bone to bone* while **tendon** *connects muscle to bone.*

10. **Examples of synovial joint**

1.	**Hinge joint**	: Elbow, Ankle, interphalangeal joints.
2.	**Ellipsoid joint**	: Wrist, all MCPs, Atlanto-occipital.
3.	**Pivot (trochoid) jt**	: Sup & Inf. radioulnar Jt., Atlanto - axial.
4.	**Condylar jt.**	: Knee, TM joint of jaw.
5.	**Saddle jt.**	:Thumb (IstCMC), sternoclavicular, calcaneocuboidal, **incudo-malleolar**
6.	**Ball & Socket**	: Shoulder, Hip, talo-calcaneonavicular, **incudo-stapedial Jt.**

11. **Movements at shoulder Joint:**

- **Adduction:** *by pectoralis major + LD.*
- **Abduction:** Humerus (120°) and scapula (60°) move in ratio of 2:1
  - Abduction (1st 15°) is initiated by — Supraspinatus
  - But main abductor (15° to 90°) is — **Deltoid.**
  - Serratus anterior & trapezius assist in overhead abduction (90° to 180°)
- *Shoulder is the m/c joint to dislocate and to undergo recurrent dislocations*

12. **Lymphatics draining into deep cervical group of LN in neck**

- **Tonsil** — Jugulo-digastric LN.
- **Tongue** — Jugulo-omohyoid
- **Thyroid and parotid** — deep cervical LN

13. **Lymphatics draining genital organs**

- **Obturator LN** — Cervix.
- **Pre-aortic** — Fundus & upper part of uterus, fallopian tube, ovary ,testis.
- **Para-aortic** — Fallopian tube, ovary, testis

→ *L/D of Cx and uterus is to **external** & internal **iliac**, obturator, parametrial LN (but NOT to deep inguinal nodes)*
→ *Lymphatics from prostatic and membranous urethra pass mostly to the internal iliac nodes and partly to external iliac nodes.Spongy (penile) urethra drains in the deep inguinal LN.*

14.**Gluteus m/s**

- **Gluteus maximus** is strong extensor of hip --- It is s/by **inferior gluteal** nerve
- **Gluteus medius and minimus** abduct the thigh at hip joint --- They are s/by **superior gluteal** nerve. Paralysis or weakness of these m/s or nerve produces +ve Trendelenberg's sign and lurching gait

15.Main Nerves of Forearm and their injuries

	Ulnar nerve	Median nerve	Radial nerve
• Root value	C7-8 T1	C5 - T1	C7,8 T1
• Also k/as	Musician Nerve	Labourer's n.,**'Eye of the hand'**	Largest branch of brachial plexus
• Proxm. lesion	*Injury at elbow*	*Injury at elbow*	*Injury in axilla*
- Cause	Cubital tunnel syndrome, # medial epicondyle, # lateral condyle humerus,	# lower end humerus,	Crutch paralysis # disloca^n upper end humerus,
- M/s affected (motor)	FCU, FDP, AdP	FCR (ulnar deviation of hand) lateral condyle humerus, (Ochsner clasping test +ve)	Supinator, brachioradialis **Pointing index**
- Sensory loss	medial 1½ fingers palmar	Palmar aspect lateral 3½ fingers	Dorsal aspect of lateral 3½ fingers
- Cl/ findings	**Froment's thumb sign** Claw hand	**Simian / ape thumb deformity** flat thenar eminence	**Wrist drop**
- Tests	**Book test,** Card test	Pen test, **Sign of Benediction**	
• Distal lesion	*Injury at wrist*	*Injury at wrist*	*Injury in Radial/ spiral groove/*
- due to	Superficial injuries,	Carpal tunnel syndrome # lower end radius, lunate dislocation	Saturday night palsy Compression on OT table, I.m. injections, # humerus shaft
- M/s affected	FDP (medial ½)	AbP, OP	Intact triceps reflex and normal extension of elbow,
• Splints used	Knuckle Bender	-----	Cock-up

16.Important mononeuropathies

- Long thoracic n.of Bell --- injury causes paralysis of serratus anterior, **winging of scapula**
- Ulnar n. injury can lead to **claw hand** (Paralysis of Lumbricals) and **cubital tunnel syndrome** in injury near elbow.
- Median n. injury can lead to **carpal tunnel syndrome**
- If lateral cutaneous br. of femoral n. injured ---**Meralgia paresthetica**
- If deen peroneal n.is injured- **Foot drop** (loss of dorsiflexionof toes & eversion of foot)
- If posterior tibial n.is injured- **Tarsal tunnel syndrome**

17.DERIVATIVES OF THREE GERM LAYERS :

Endoderm	Ectoderm	Mesoderm
- Epithelium of whole git	- Brain, neural crest	- LN, spleen, mesenchyme -
- Resp. tract	- Adrenal Medulla	- Mesothelium
- *Pharyngeal pouches*	- *Pharyngeal clefts*	- *Pharyngeal arches*
- Liver & GB		- CVS, blood, BM
- Urethra	- Oligodendrocytes	- *Dura mater*
- UB	- **Lens** (from Surface E~)	- Trigone of UB
- Lower part of vagina	- Iris muscles(**Sphincter & dilator pupillae**)	- Monocyte derv (Ex- Microglia)
- Ducts & acini of pancreas	- Epithelium of cornea, conjunctiva outer	- **Ciliary body** & iris stroma
- Most endocrinal glands (except adr. medulla & pituitary which are ectodermal)	- Lids	- Stroma of cornea
	- Retinal pigment epithelium	- **Sclera, choroid**, vitreous
	- Sensory retina	- Lids (Muscles)
	- Membranous Labyrinth	- Bony orbit
		- Adrenal Cortex

BIOCHEMISTRY

1.Amino acids

- **Essential /Indispensable A/A**
  - These are 9 in number and include **m**ethionine, **a**rginine, **threonine**, **t**ryptophan, **v**aline, **i**soleucine,**l**eucine, **p**henylalanine,**l**ysine *(MATT VIL F(Ph)Ly)* [Remember T is not tyrosine & A is not alanine]
  - Arginine is nutritionally semiessential, becomes essential in growing children.Same is true to some extent for histidine
- **Amino acids with non- polar side chain**
  - Leucine (most non-polar) > valine, proline, phenylalanine, methionine, Alanine
  - Leucine & valine are aa with uncharged i.e. non-polar and branched side chains
- **Basic amino acids**
  Arginine > lysine > histidine
- **Sulphur containing amino acids**
  - Cysteine, cystine, and methionine
  - Urinary sulphates are mainly derived from these sulphur containing a/a
- **Aromatic amino acids**
  - Amino acids with aromatic ring : Phenylalanine, tyrosine, histidine, tryptophan.
  - All aromatic amino acids are derived from alanine.
  - **Melatonin is synthesized from tryptophan & melanin from tyrosine**

  Tryptophan → Serotonin → Melatonin
  *Phenylalanine → **Tyrosine** → E, NE, T_3, T_4 & Melanin.*

2 . Structure of proteins

- *Primary structure* --- Linear sequence of a/a. Stabilized by covalent peptide bonds (strongest bond)
- *Secondary structure* --- Stabilized by multiple H_2 - bonds, sulphide bond

1. **α - Helix** --- *Intra*-chain hydrogen bonding. eg. : keratin
   Proteins of hair, nails and skin are rich in keratin & thus in α - helix.
   (**proline is absent** in α - helix)
2. **β - Pleated sheet structure** --- *Inter* chain hydrogen bonding. *β-keratin* in silk fibres
   proline present (causes kinks)
3. **Triple Helix** --- In collagen (glycine is present at every 3rd position)
   inter chain hydrogen-bonding

- *Tertiary*
  The term "tertiary structure" refers to the entire 3-D confirmation of a polypeptide. Major interaction are hydrophobic. Other bonds are ionic, Vanderwal. Vibratory property is seen using *X-ray diffraction*.
- *Quaternary*
  Peptide bonds do not take part in formation of this bond

3. Points from metabolism :

- *Acetoacetate is most important ketone bodies as it can form acetone & β–OH butyric acid both.*
- *β-OH butyrate is predominant KB of blood / urine but it is not a true ketone*
- *Acetyl CoA serves as link b/w glycolysis and TCA cycle (The pathway of carbohydrate and fat metabolism meet)*
- ***Fumarate** serves as a link between urea cycle and citric acid cycle*
- *UDP-glucose is the key substrate for glycogen synthesis.*
- *Acetoacetyl CoA is starting material and HMG CoA synthetase is rate limiting step for K.B.synthesis.*
- **Active FA is →** *Acyl CoA*
- **Active Acetate is →** *Acetyl CoA*
- *FA are not freely permeable across mitochondrial membrane (require carnitine transporter)*
- *Acetyl CoA is the starting material for the synthesis of long chain FA.*

4. Some important inhibitors :

• Glycolysis	*Arsenic*	--- *Phosphoglycerate Kinase.*
	Iodoacetate	--- *glyceraldehyde - 3-p dehydrogenase*
	Fluoride	--- *Enolase*
	Citrate, ATP, c-AMP, Glucagon	--- *Phosphofructokinase*
• Kreb's cycle	*Fluoroacetate*	--- *Aconitase*
	As	--- *a-ketoglutarate dehydrogenase*
	Malonate/ OAA	--- *succinate dehydrogenase*
• Uncouplers of oxidative phosphorylation	*2,4 dinitrophenol, dicoumarol, Ca^{++}, CCCP (Most active)*	
• Inhibitors of oxidative phosphorylation	*Alcohol, Salicylates, CO, Cyanides*	
	Oligomycin, Atractyloside, Bongrekate.	

5. End products of

- *Purine catabolism* → *Uric acid*
- *Pyrimidine catabolism* → *β - Alanine & β - Amino isobutyric acid + NH_3*
- *FA Oxidation* → *Acetyl CoA (propionyl CoA with odd chain FA)*
- *Glycolysis* → *Pyruvate*
- *Nucleic acid on hydrolysis* → *Yields base + sugar*

  DNA on complete hydrolysis → *A, G, C, T + Deoxy ribose*

  RNA on complete hydrolysis → *A, G, C, U + D -ribose*

6. Rate limiting steps / key enzymes:-

- **In cholesterol synthesis ---- HMG CoA reductase**
- **In Ketone bodies synthesis ---- HMG CoA synthetase**
- In FA synthesis (lipogenesis) --- Acetyl CoA carboxylase
- In Bile acid synthesis --- 7 - α hydroxylase
- Gluconeogenesis --- Pyruvate carboxylase, PEP-C (Phospho Enol Pyruvate - Carboxykinase)
- Glycogenesis --- Glycogen synthetase (dephosphorylated form)
- Glycolysis --- Phosphofructokinase
- Catecholamines synthesis --- Tyrosine hydroxylase
- Glycogenolysis --- Phosphorylase (phosphorylated form)
- Krebs/ TCA cycle --- Isocitrate dehydrogenase
- Uric acid synthesis --- Xanthine oxidase

Genetics

1. CHROMOSOMAL ASSOCIATION

- Chromosome 1 : Rh system, neuroblastoma
- Chromosome 2 : Cystinuria, hypobetalipoproteinemia
- Chromosome 3 : RCC with Von Hippel Lindau syndrome, alkaptonuria
- Chromosome 4 : Huntington's chorea, achondroplasia, Parkinson's disease
- Chromosome 5 : FAP & Colorectal carcinoma **(5q)**, cri-du-chat syndrome
- Chromosome 6 : HLAs system,/MHC antigenes on **6p**, DM
- Chromosome 7 : Cystic fibrosis
- Chromosome 8 : Osteopetrosis
- Chromosome 9 : ABO blood group Ag, Friedreich's ataxia
- Chromosome 11 : Gene for β-globin chain (sickle cell d/s), β-thalassemia, Wilm's,MEN1, ataxia telangiectasia, human insulin gene, PTH gene
- Chromosome 12 : PKU, vWF, carcinoma testis
- Chromosome 13 : Retinoblastoma (13q14), osteosarcoma, Wilson's disease
- Chromosome 14 : Alpha-1 Antitrypsin-deficiency, familial HOCM
- Chromosome 15 : Marfan's syndrome, Albinism, Prader Willi syndrome, Angelman syndrome.
- Chromosome 16 : α-thalassemia, adult polycystic kidney disease
- Chromosome 17 : Breast carcinoma, medulloblastoma, neurofibromatosis, ovarian tumour
- Chromosome 19 : *Myotonia dystrophica*, gene for insulin receptor
- Chromosome 20 : MODY type1-DM, Prions diseases (CJD)
- Chromosome 21 : Homocystinuria, amyloidosis
- Chromosome 22 : Meningioma, acoustic neuroma, NF!-2, DiGeorge syndrome
- Chromosome Xq : *Gene for androgen insensitivity (testicular feminization) syndrome, fragile-X syndrome* (Xq 27)

2. MENDELIAN DISORDERS / SINGLE GENE DISORDERS

AD	AR	X-linked R	X-linked D
- FAP of colon - Achondroplasia - Acute intermittent porphyria - Hyperlipoproteinemia 1,2,3,4 - Hemorrhagic telangiectasia - HS - Huntington's ds - Marfan's syndrome. - Neurofibromatosis - **Osteogenesis imperfecta** - Polydactyly - **vWD** - Retinoblastoma	Most inborn error of metabolism e.g. - Albinism - Alkaptonuria - Agammaglobulinemia (swiss type) - Cystic fibrosis - Maple Syrup Urine ds - Hemochromatosis - Wilson's ds - PKU - Lysosomal storage ds - Glycogenosis, Gaucher's ds., PK deficiency - 21-Hydoxylase def, CAH	- Hemophilia - colour blindness - **G-6-P D def.** (incompletely dominant expression) - DI - CGD - Agammaglobulinemia (Bruton's) - Duchenne's and Becker's Muscle dystrophy - RP - Hydrocephalus - Ornithine transcarbamylase	- *Vit D resistant/ hypophosphatemic rickets* - Alport syndrome - Familial hypophosphatemia - blood group Xg - Incontinentia Pigmenti - Fabry's Ds

PHYSIOLOGY

1.CELL ORGANALLES :

Nucleolus	---	*Site of synthesis of **r-RNA***
Ribosomes	---	*Site of protein synthesis, translation of mRNA*
RER/ Granular ER	---	*Site of protein synthesis (e.g.hormones, proteins found in enzymes)*
SER/ Agranular ER	---	*Site of steroid synthesis / detoxification/ FA elongation*
Golgi body	---	*Processing/ packaging, **intracellular sorting of proteins**, formation of lysosomes*
Lysosomes	---	*Contain digestive/ lytic enzymes and hydrolases **(suicidal bags of cell)***
Peroxisomes	---	*Contain oxidases*

2. ESR AND BMR

- **ESR is ↓ in**
  - Polycythemia vera
  - Smoking
  - CHF
  - Sickle cell disease
- **BMR is ↑in**
  - Exercise, fever
  - Feeding
  - Hyperthyroidism
  - ↑ in m/s mass, ↑ 2,3 DPG
- **BMR is ↓ in**
  - Obesity
  - Starvation (↓ in lean body mass)
  - Hypothyroidism,Old age

3. Transport or binding proteins in plasma

Ceruloplasmin	--- *Binds & transport **copper** ion (Cu^{++})in plasma*
Transferrin	--- *Transports **iron***
Ferritin	--- *Storage form of iron in tissues*
Transthyretin (Prealbumin)	--- *Binds & transports thyroxine (TBG) & retinol*
Transcortin	--- *Binds cortisol(cortisol binding globulin;CBG)*
Haptoglobin	--- *Binds extracorpuscular Hb (levels are ↓ in hemolytic anemias)*
Hemopexin	--- *Binds heme*

4 . Nerve Fibres Erlanger and Gasser's classification

Sympathetic *Fibre type*	Post ganglionic Sympathetic	0.3-1.3 *Diameter μm*	0.7-2.3 *Conduction Velocity*	*Conduction block by*	*Remark*
A (myelinated)					
Ia,Ib (Aα)	Proprioception	15-20	70-120	pressure	A_α has max^m
II (Aβ)	Touch, pressure	5-12	30-70		diameter &
Aγ	Motor to spindles	3-6	15-30		max^m velocity
IIIAδ	fast pain, cold, touch	2-5	3-15		(fastestconduc^n)
B					
(partially myelinated)	Preganglionic Autonomic efferents	<3	3-15	Hypoxia	
C (unmyelinated)					
Dorsal root	Slow pain, temp (Cold/warmth)	0.4-1.2	0.3-2	Local anesthetic	

5 . Imp. fibres carrying various sensations

System of Fibers	*Tract*	*Sensation carried*	*Effects of lesion*
• Anterolateral	Ventral or anterior STT Lateral STT	Crude touch/ pressure Pin prick/ Pain, temperature	Loss of C/L touch Loss of C/L pain, temp.
• Dorsal /posterior columns (Tracts of Gall & and Burdach)	1.Fasciculus gracilis (sacral, lumbar region) 2.Fasciculus cuneatus (Thoracic, cervical region)	Fine touch, fine pressure Vibration, joint/ position sense	**Brown Sequard syndrome**
• Spinocerebellar	SCT	Smoothness and co-ordinat^{n} of movt	-

6 . Neurotransmitters and Neuromodulators

- **Inhibitory : GABA** is most prevalent inhibitory neurotransmitter in central nervous system (20%)
  Glycine is inhibitory NT in brainstem, spinal cord, forebrain, retina & is excitatory for most of the brain.
- **Glutamate** (major, most abundant aa in brain) and aspartate are excitatory neurotransmitter in brain/CNS
- **Ach** is found in preganglionic ANS endings, postganglionic parasympathetic endings, postganglionic sympa thetic sweat glands and vasodilator endings in m/s
- **β- endorphins** are found in hypothalamus, thalamus, brainstem, retina
- **Somatostatin is** secreted from median eminence of hypothalamus,substantia gelatinosa, retina

→ *Pyridoxine is a cofactor for GABA*

→ *Glycine acts on NMDA receptors*

7 . CVS

→ *Afterload depends upon* --- *arterial resistance (↑es in systemic HTN)*

→ *Preload depends upon* --- *EDVV (or end diastolic fibre length)*

→ *Systolic BP depends upon* --- *contractility (pumping power) of heart*

→ *Diastolic BP depends mainly upon TPR (total peripheral resistance)*

→ *In systole coronary blood flow falls by 40%*

→ *Lt atrial filling pressure closely approximates PCWP (3-8 mmHg normally)*

→ *SA node is called pacemaker because it initiates the impulse at faster rate*

8. O_2 Dissociation curve (ODC)

Shifts to left	Shifts to right
↓ temp	↑ temp
↑ pH (alkalosis)	↓ pH, ↑ H^+ (acidosis)
↓ 2, 3 DPG	↑ 2, 3 DPG
	High altitude
↑ HbF	↑ CO_2, hypoxia
CO-poisoning	
Myoglobin (Mb)	

Factors affecting RBC 2, 3 BPG concentration

↓ by	↑ by
Acidosis	Hormones (GH, androgen, TH)
Stored blood	High pallor (Anaemia)
	Heavy exercise
	High altitude
	High body temp
	Hypoxia (chronic)
	[Mnemonic : 6 'H']

PATHOLOGY AND MICROBIOLOGY

1. CELL NECROSIS

- Chromatin fragments show **"Smeared'** pattern
- 5 types

Cagulative	*Liquefactive/ Colliquative*	*Caseous*	*Fat*	*Fibrinoid*
M/c type, d/to irreversible ischemia, Seen in heart, (1st week of **MI**) kidney, liver/spleen *Gangrene*	d/to ischemic injury/ focal infections ghost cells+ Seen in brain infarcts, **abscess cavity** Wet gangrene	**TB** Centre of TB	d/to liberation of lipases Acute pancreatitis, Traumatic fat necrosis of breasts	Immune mediated Vasculitis, HTN, PAN

2. INFLAMMATORY MEDIATORS

(+ Promotes, - no effect)

Mediator	**Source**	**Vasodilata[n]**	**Vascular leakage *(permeability)***	**Chemotaxis**	**Other effects**
Histamine	Mast cells, basophils	+	+	-	Leucocyte adhesion
Serotonin	Platelets	-	+	-	Constriction of arteriole
Bradykinin	Kininogen	+	+	-	Pain
C_{3a}	Complement system	-	+	-	Opsonic fragment C_3b
C_{5a}	Complement system	-	+	+	Leucocyte adhesion
Prostaglandins	Cell membrane PL	+	variable	-	Pain, fever
LT-B_4	Leucocytes	-	-	+	Leucocyte adhesion
LT-$C_4D_4E_4$	Leucocytes, mast cells	-	+	-	Vasoconstriction
PAF	Leucocytes	-	+	+	
IL-1, IL-6 & TNF-α	Macrophage	-	-	+	Acute phase reactant

- **Pain mediator in inflammation** : **IL-1**, IL-6, TNFα , Bradykinin (vasodilator) Prostaglandins (PGF_2 & E_2) Serotonin, AMP, Ach, Potassium
- **Mediators of fever:** : **IL-1**, IL-6, TNFα, Prostaglandins
- **Eosinophils secrete :** : MBP, hydrolases, reactive O2 species
- **Platelets secrete :** : Serotonin
- **Chemotaxis Mediator** : LTB_4, IL-8, **C5a** Leukokinin, Lysosomal cationic protein

3. IMPORTANT SURFACE ANTIGENS ON IMMUNE CELLS

Cluster of Diff.	Primary Cellular Distribution	Function
CD3	**Pan T-cell marker**	**T cell receptor**
CD4	*T helper-inducer cells, macrophage*	Binds to MHC class II, +ve in Mycosis fungoides
CD5	----	Mantle cell lymphoma
CD8	*T cytotoxic -suppressor cells*	Binds MHC Class I
CD10	Immature B cells	CALLA antigen, found in ALL
CD13,14	Monocytes	
CD16 & CD56	Primary NK cell associated antigens	
CD19	Pan-B cell marker	Appears early in B-cell maturation
CD20/21/22	B cell markers	CD 21 is complement receptor (CR2)
CD25	Marker of T, B & macrophage	Marker of **HCL**
CD33,13	Most sensitive myeloid cell marker	
CD34	Hematopoietic progenitor cells	**"Stem Cell"** marker
CD38	Plasma cells	Multiple myeloma marker (also CD-33)
CD45	Leukocyte common antigen	Pan leukocyte marker, *for malignant lymphoma*
CD45RO	Memory T-cells	Subset of T cortical thymocytes
CD30	*Marker for Hodgkin's ds*	*LP -ve*
CD117	Most specific myeloid cell marker	Marker for myeloid lineage in AML,CML, blast crisis, granulocytic sarcoma

- *CD1 to 8 are T-cell markers except CD6.*
- *CD marker most specifically a/w GIST --- CD117*
- *In Mantle cell lymphoma CD 19, CD 20, CD 43, & **CD 5** +ve but CD 23 –ve.*
- *In HCL CD 19, CD 20 ,**CD 25** and other B-cell marker +ve (CD 19, CD 20)*
- *In Burkitt's lymphoma CD 19, CD 20, **CD 10** +ve.* *[for details see hemato section]*

4. SOME IMP. HLA ASSOCIATIONS

- HLA-A_1 --- Hodgkin's disease
- HLA-A_3 --- Idiopathic Hemochromatosis
- HLA-B_5 --- Behcet's syndrome, UC, PCOD
- HLA-DR_3 /DR_4 --- IDDM (NIDDM is not associated with HLA)
- HLA-B_{27} --- Ankylosing spondylitis, Reiter's d/s, acute anterior uveitis, Psoriasis [*Mnemonic* : PAIR]
- HLA-Cw_6 --- Psoriasis
- HLA-DR_2 --- Narcolepsy
- HLA-DR_2 DR_3 DQ_2 --- Grave's disease
- HLA-DR_3 --- SLE, RHD, *celiac d/s (also DQ_2), Chronic active hepatitis, Slogren syndrome*
- HLA-DR_2 DR_6 --- TT-leprosy, pulmonary TB
- HLA-DQw_1 --- Lepromatous leprosy (LL)
- HLA-DR_4 --- RA, Pemphigus
- HLA-DR_5, B_5 --- Behcet's syndrome

5. HYPERSENSITIVITY REACTIONS

(Reaginic) Type I Anaphylactic type	(Cytotoxic) Type II	(Immune complex ds) Type III	Cell-mediated or (Delayed HS) Type IV
• **Casoni's test.**	• Auto-immunehemloytic. anemias	*Systemic*	• Montenegro test for leishmaniasis
• Allergy.	• Good-pasture's syndrome.	• Shick's test	• Tuberculin test.
• Anaphylaxis.	• Addisonian pernicious anemia.	• SLE, RA, PAN	• Patch test (contact dermatitis, Poison ivy dermatitis)
• Hay fever.	• Primary Biliary cirrhosis.	• Post streptococcal GN	• Graft reject^{n} acute/chronic
• Asthma	• Blood transfusion reactions, hemolytic disease of newborn (HDN)	• Serum sickness	• Schistosomiasis granuloma
• Acute dermatitis	• Rheumatic fever	• Fibrinoid necrosis	• Jone's motes cutaneus Basophil reaction
• Allergic rhinitis (remember 5'A')		• Hyperacute graft reject^{n}	• Sarcoidosis
• PK (Prusnitz Kunster) reaction		• Penicillamine reaction	• ENL
• Theobald Smith phenomenon		*Localized (Arthus reaction)*	
• R_x: Adrenaline (DOC), steroids, antihistaminic		• Cutaneous vasculitis	
		• Hypersensitivity pneumonitis (Farmer's lung)	
	DOC for Type-II, Type-III, Type-IV → Steroids		

6. ULCERS

- **In TB** --- *Transverse, multiple, circumferential ulcers with strictures*
  --- *Mesenteric LN involved.*
- **In Crohn's ds** --- Longitudinal ulcers
- **In Amebic ulcers** --- *Flask shaped ulcers (irregular large confluent ulcers)*

7. Serological markers of HBV-extract

- *HBsAg is the 1st marker detectable in serum*
- *IgM anti-HBc is the best marker of acute infection; only marker during window period*
- *HBeAg is marker of infectivity and major predictor of vertical transmission*
- *Anti-HBs is the protective antibody. It is the only marker to appear after hepatitis B vaccination*
- *HBe Ag is qualitative marker while HBV DNA is quantitative marker of infection*
- *Hepatitis virus with significant (maximum) perinatal transmission ---HBV*
- *Hepatitis virus with significant (maximum) perinatal mortality ---HBV*
- *Autoimmune hepatitis type I is a/w ANA, type II is a/w ALKM-1and ACL-1, . LKM-2 is a/w drug induced hepatitis while LKM-3 is a/w Hepatitis D.*

8. Complements and leukotriens

- **Major serum Opsonin** : **C_{3b} & Fc** Fragment of IgG
- **Membrane attack complex (MAC)** : **C_5-C_9** (used in bacterial cell lysis)
- **Anaphylotoxin** : **C_{5a}** > C_{3a}, C_{4a} *(C_{5a} is more potent)*
- **SRS-A (Slow reacting substances of anaphylaxis)** : LT-C_4, D_4, E_4
- **Leukotriene which is chemotactic** : LT-B_4 (promotes leucocyte adhesion)
- **↑ vascular permeability** : LTC_4, LTD_4, LTE_4
- **Vasodilatation** : PGD_2, PGE_2, PGI_2 $PGF_{2\alpha}$

9. M/c Organism Implicated in

- **M/c** species of pseudomonas causing intravenous catheter related infection --- Pseudomonas maltiphilla
- **M/c** organism implicated in osteomyelitis --- Staphylococcus aureus
- **M/c** organism implicated in atypical pneumonia --- Mycoplasma
- **M/c** cause of epidemic pleurodynia --- Group B Coxsackie viruses, B3 and B5
- **M/c** cause of Handfoot mouth d/s --- Coxsackie virus A16
- **M/c** viruses implicated in encephalitis --- Echoviruses 9

10. Transport medias

- Pike's media --- Streptococcus pyogens
- VR media --- Vibrio
- Cary-Blair media --- Vibrio cholerae, shigella, salmonella, pasteurella
- Stuart media --- N. gonococci
- Sach's media, SS media --- Shigella

11. Causative organism in

- Oraya fever --- Bartonella bacilliformis
  Cat- scratch disease --- Bartonella henselae
- Trench fever --- Bartonella quintana
- Epidemic Relapsing fever --- Borrelia recurrentis
  Endemic Relapsing fever --- Borrelia duttonii, B. hermsii, B. parkeri
  Lyme disease --- Borrelia burgdorferi
- Pontaic fever --- Legionella pneumophila
- Weils disease --- Leptospira icterohemorrhagica
- Undulent/ Malta fever (Mediterranian fever) --- Brucella melitensis
- Rat - bite fever
  - Sodoku --- Spirillum minus
  - Haber-hill fever --- Streptobacillus moniliformis

12. EGGS IN STOOL

Bile stained (coloured) : Ascaris, Trichuris (*Mnemonic :* coloured BAT & Colourless HEN)

Non stained (colourless) : H. nana, Hookworm, Enterobius

13. LARVA IN STOOLS : Strongyloides
Hookworm (Filiform larva)

14. AMONG NEMATODES

Viviparous (Lays larva)	Ovo-viviparous	Oviparous (Lays eggs)
Filaria, guinea worm, trichinella spiralis	Strongyloides, w. bancrofti	Hookworm, Enterobius, ascaris, trichuris trichiura [HEAT]

- *Ground itch / Ancylostoma dermatitis - is caused by Necator*
- *Cutaneous Larva migrans / cutis and creeping eruptions- are caused by A. Brazilians & A. caninum*
- *Visceral Larva migrans- is caused by Toxocara cani (treated by glucocorticoids)*
- *Larva currans - by strongyloides (also Hyperinfection syndrome, auto infection)*
- *Strongyloides, Necator Americans, Ascaris - pass through the lung during infectious cycle in human but Wucheria bancrofti doses not. However Wucheria bancrofti causes pulmonary eosinophilia.*
- *Parasitic ova which is infectious as soon as passed in stool --- enterobius*

❑ **Eggs which do not float in saturated NaCl solution**

T. solium / sagginata, Unfertilized eggs of Ascaris, Intestinal flukes [mnemonic-SUIT]

PHARMACOLOGY

1. DRUGS SAFE IN

Hepatic diseases

- Digoxin
- Ethambutol
- Streptomycin
- Chloroquine

(DESC)

Antibiotics which c/b given in liver d/s

- Ampicillin
- Cloxacillin
- IIIrd gen. cephalosporins
- Aminoglycosides (CACA)

Renal diseases

- Doxycycline
- Polymyxin-B
- Penicillin
- Adriamycin
- Ceftriaxone
- Cefoperazone
- CPZ
- Pefloxacin
- Chloramphenicol
- Erythromycin
- Omeprazole
- Dicloxacillin
- Nafcillin
- Clindamycin
- Metronidazole

Porphyria

- Glucocorticoid
- Clonazepam
- Streptomycin
- Penicillin
- Aspirin, acetaminophen
- Atropine
- Insulin
- Pefloxacin
- Opiates
- Narcotic analgesics

2. M/A OF ANTIMICROBIALS

Drugs inhibiting cell wall synthesis

- Cephalosporin
- Vancomycin
- Streptogrammins
- Cycloserine
- Bacitracin

Drugs causing leakage from cell membrane

- Polymyxin
- Amphotericin B
- Bacitracin
- Colistin
- Nystatin

Drugs inhibiting protein synthesis

- Chloramphenicol
- Clindamycin
- Erythromycin

Drugs inhibiting DNA gyrase

- Fluoroquinolones, ciprofloxacin

3. Reverse transcriptase inhibitors (RTI)

Nucleoside RTI

- Zidovudine
- Zalcitabine
- Abacavir
- Lamivudine
- Stavudine
- Didanosine
- Emitricitabine

Non Nucleoside RTI (NNRTI)

- Delavirdine
- Efavirenz
- Nevirapine

Protease inhibitors (PIs)

- Amprenavir
- Indinavir
- Nelfinavir
- Ritonavir/lopinavir
- Saquinavir
- Fosqmprenavir

Nucleotide RTI

- Adefovir
- Tenofovir

Entry inhibitor

- Enfuvirtide (peptide T 20)

3. ATT

Property	INH	Rmp	Pzm	Ethambutol	Streptomycin
• Most effective Vs bacilli	Rapid/ fast growers population	Slow growing (persisters/ **dormant** bacilli)	Fast growing	multiplying	extracellular
• Acts on extra/ intracellular	extra + intra	intra	intra	–	extra
• Acts on medium	acidic/ basic	–	acidic		alkaline
• Crosses BBB	++ (penetrates all body cavities)	+	+	+ (incompletely)	–
• M/A	Inhibit mycolic acid synthesis	DNA dependent RNA polymerase		Tuberculostatic	
• Other features	Max[m] drug resistance in India	Derived from Strepto. mediterens		Patient's acceptibility good	
• Ad/ E	Sideroblastic anemia Pellagra like rashes Optic neuritis Peripheral neuropathy SLE / lupus Hepatitis	Resp-, cutaneous abd-, flu-like synd	Fulm. hepatitis Hyperuricemia most hepatotoxic	Optic neuritis Hyperuricemia	Ototoxic & vestibulotoxic
• Contraindication			Liver d/s Pregnancy		Pregnancy

4. **Indications of Corticosteroids :**

In SLE

- Thrombocytopenic purpura (TTP)
- Myo/peri-carditis
- Hemolytic anemia
- Alveolar hemorrhage
- Severe polyserositis
- Severe CNS Symp. (convulsion)
- Nephritis

In RA

- **Mononeuritis multiplex**
- Pericarditis
- Systemic vasculitis
- Scleritis
- Keratitis

In TB

- Extensive disease TB-meningitis/ *CNS TB*
- Miliary TB
- Pleurisy
- Pericarditis
- Skin TB, MDR-TB
- Polyserositis

Not indicated in
- Koch's abdomen
- Progressive primary PTB

Others

- Shock & meningitis in meningococcemia

FORENSIC MEDICINE

1.Studies/Systems in forensic

- **Anthropometry** : *Bertillon System [after 21yr skeletal dimensions remain unchanged]*
- **Finger Printing** : *Galton System [Dactylography]*
- **Gustafson's method** : *Used for dental changes over 21 yr.*
- **Poroscopy** : *Locard method (examination of pores on fingers)*
- **Podogram** : *Study of footprints*
- **Superimposition** : *Identification by matching photographs with skull*
- **Chelioscopy** : *Identification by lip print*
- **Thanatology** : *Deals with death in all aspects*
- **Trichology** : is the study of hairs
- **Traumatology** : is the study of trauma victims
- **Spectrogram** : *Helpful in trapping anonymous phone callers*

2. Fractures of skull

- **Fissured #**
  Linear # involving whole thickness of bone or inner / outer table only. Blow with weapon having broad surface.

- **Depressed #**
  Also k/as *fracture a la signature* **[signature #]** . Pattern often resembles type of weapon used. Localized depressed # are caused by blow from heavy weapon with small striking surface

- **Pond or Indented # (Ping pong ball #)**
  Occurs in skulls of **infants** /children. Inner table is not fractures but fissured. # may occur in outer table around the periphery of dent. It results from *obstetric forceps blade*.

- **Gutter #**
  Part of bone is removed . Seen in bullet injury wounds / **firearms**

- **Diastatic or Sutural #**
  Seen in young persons d/to blow on head with blunt weapon. Sutural separation may occur

- **Counter Coup #**
  Fracture of the skull occurring **opposite** to the site of force.

- **Undertaker's #**
  # around cervical spine d/to forcible backward falling of head after death. Tears open on the disc spaces usually around C_{6-7-8}

- **Hinge #**
  Fracture around foramen magnum. The so called **'motorcyclist # '** is an example of hinge #. Base of the skull is divided into anterior and posterior halves each moving independently over other like a hinge

- *__Coup__ means injury is located at the site of impact, and results directly by impacting force.*
- *__Contrecoup__ mean lesion is present in an area opposite to the site of impact. (brain is commonly involved)*
- *__Intermediary coup__ – contusion found in deeper structures of the brain along the line of impact.*
- *__Lucid interval__ is a feature of EDH (extra dural hemorrhage) and insanity. During this period a person can make a valid will, can give a consent i.e. he is legally responsible for his deed.*

- ✈ ***Heat hematoma*** *(Burn hematoma) is seen b/w skull & duramater in thermal deaths*
- ✈ *M/c type of hemorrhage in injury to boxers---subdural hemorrhage*

3. Post mortem changes/ asphyxia/thermal deaths

- **Spalding sign** is bec/of maceration
- marbled appearance **(marbling) is sen in putrefaction**.
- **First external sign** of putrefaction in a body lying in air is usually a *greenish discoloration of the skin over the region of caecum.* Appears in 12-24 hours.
- Pugilistic attitude (boxing, fencing or defense attitude) is seen in ***burns*** it is
- Sexual asphyxia is a/w --- masochism
- Joule burn is seen in ***electrocution,*** found at point of entry of current
- Arborescent or Filigree burns (Lichtenberg's flowers pattern) are seen in - ***lightening.***
- Crocodile / flash burns are seen in - ***electrocution.***
- Paleness of face, oblique ligature mark, Hyoid bone # and saliva drooling from mouth is seen in ***hanging.***
- Congested / flushed face, marked with petechiae, transverse ligature mark, # of thyroid cartilage, emphysematous bullae on surface of lungs are seen in death due to - ***Strangulation.***
- Presence of fine, white, Lathery froth at mouth & nostrils is most suggestive of - ***Drowning.***
- Weeds in hands, washer man hands, emphysema aquosum, Paltauf's hemorrhages and +ve. Gettler test is seen in death due to - ***Drowning.***

5. Characteristic features of some poisonings

Poisoning with		Feature
• Alcohol	---	Mc Evan's sign, Marbid Jealousy
• Cocaine	---	Magnan symptoms or formication, *jet black tongue* (Cocaine bugs/ **tactile** hallucinations), Acute MI
• Cannabis	---	**Run amok**, amotivational syndrome
• Amphetamine	---	Paranoid hallucinatory features (Induced psychosis)
• LSD	---	Bad trips, flash backs
• Phencyclidine	---	Dissociative anaesthesia

PSM

1. Epidemiological studies

- *Case control study ---* *Odds ratio is calculated*
  *Best for investigation of a **rare d/s** & Ix of multiple exposure and determinants*
- *Cohort study ---* *Best for investigation of rare cause and testing multiple effects of cause, measurement of time relationship and for direct measurement of incidence.*
  Best for calculating RR, AR, population AR,acute d/s.
- *Cross sectional study ---* *Is for prevalence and chronic d/s.*
- *Ecological study ---* *Is for group characteristics.*

2. Infectious diseases whose control is solely based on active immunization

- Diphtheria
- Polio
- Tetanus
- Measles

3. Both active & passive vaccination can be given together

- Diphtheria
- Hepatitis B
- Tetanus
- Rabies (*not* for measles)

4. Isolation has distinct value in

- Diphtheria
- Cholera
- Pneumonic plague
- Streptococcal respiratory diseases

5. Soil acts as a reservoir for the agents of following infectious diseases

- Mycetoma
- Anthrax
- Coccidiomycosis
- Tetanus

6. Dead - end infections

- Rabies
- Plague (Bubonic)
- Tetanus
- Trichinosis

7. Only human being are reservoir for

- Measles
- Salmonella (Typhoid)
- Hookworm
- Amebiasis, Cholera
- Leishmaniasis in India

8. Latent infection occurs in

- HSV
- Ancylostoma
- Slow virus infections
- Brill-Zinser disease

9. D/s infective during later part of incubation period

- Whooping cough (pertussis)
- Measles
- Chickenpox
- Hepatitis A

10. Infections: Imp facts

- **Carriers are not known to occur in** : Measles
- **Subclinical infection is not seen in** : Measles
- **Herd immunity is not important in** : Tetanus
- **Isolation is not useful/ practicized in** : Polio, Hepatitis A, Typhoid fever
- **Maternal antibody are not protective Vs** : Pertussis

11. Biological transmission of arthropod borne disease

- **Propagative** : No cyclic change only multiplication ⇒ *Plague* bacilli in rat flea, Yellow fever virus in aedes
- **Cyclo-propagative** : Disease agent undergo cycle + multiplication ⇒ *Plasmodium* in anopheles (malaria)
- **Cyclo-developmental** : disease agent undergo cycle + no multiplication ⇒ Dracunculiasis (guineaworm), filariasis

12. Case notification under IHR

- Cholera
- Plague
- Yellow fever

13. Diseases which are notifiable to WHO and also subjected to International surveillance

- Louse borne typhus
- Relapsing fever
- Malaria
- Salmonellosis
- Polio
- Influenza (Viral)
- Rabies

[*mnemonic* : PRISM Lo]

14. Some Important Definitions

- **Screening time**
  Interval b/n 1st clinical detection & final critical point
- **Lead-time**
  Time lag b/n 1st possible detection & usual time of diagnosis
- **Serial interval**
  Gap in time b/n onset of primary & secondary case. (measures incubation period)
- **Generation time**
  Time interval b/n receipt of infection & maximum infectivity of host
- **Period of surveillance (quarantine)**
  Equal to maximum I.P.
- **Primary case**
  1st case of a communicable disease introduced into population unit which is studied (in an epidemic), which may or may not come to an observer's attention.
- **Index case**
  1st case to come to attention to investigator
- **Latent infection**
  During which infectious agent is not shaded or not demonstrable in blood / tissue
  Ex: HSV, Brill-Zinsser disease, ancylostoma, slow virus disease
- **Pseudo-carrier** - Carriers of avirulent organism
- **Incubation period**
  Time interval b/w invasion of infectious agent & appearance of first sign/symptom.
- **Isolation**
  Restriction of infected person for the period of communicability.

15. PERIOD OF ISOLATION

- In salmonellosis isolation is recommended till 3 consecutive stool cultures are negative
- In MUMPS isolation is recommended untill swelling subsides
- Isolation of the patient as a measure to prevent disease among contacts is not very useful for ---- Hepatitis A

Medicine

1. M/c complication of

	In Children	In Adult
• *Measles*	*ASOM*	*Bronchopneumonia*
• Mumps	Aseptic meningitis	Orchitis, oophoritis
• Rubella	Arthralgia	
• Chickenpox	CNS Complications (ataxia)	Interstitial pneumonia secondary bacterial infections of skin
• Meningococcal meningitis	Water-house-Fredrickson synd.	--
• Pertussis	Pneumonia (asphyxia in infant)	Bronchopneumonia

2. Not a complication of..... / --- rarely causes

- Measles --- Aseptic meningitis, optic neuritis, pancreatitis
- Mumps --- Pneumonia, appendicitis
- Chickenpox --- Enteritis, pancreatitis
- Diphtheria --- Vertigo
- Pertussis --- Myocarditis, bacterial endocarditis

→ *Disseminated gonococcal infection does not cause --- Nephritis*
→ *Botulism, staphylococcal food poisoning does not cause ---Fever, diarrhoea*
→ *Serum amylase is not increased in --- Acute appendicitis*

3. Organs NOT affected in

in IUGR---Brain (lung, heart least affected)
in Maternal DM --- Brain, kidney, tongue (no macroglossia)
in Sarcoidosis ---Adrenals (least affected)
in TB ---Heart, pancreas, skeletal muscle.
in Cryptococcosis---Kidney (rarely affected)

→ *Bronchiectasis is not associated with carcinoma bronchus*
→ *Amyloidosis does not occur in carcinoma bronchus*
→ *Clubbing does not occur in Chronic Bronchitis ,SCLC, Bronchial asthma*

4. HEMODIALYSIS IS ——

Useful in...

- Barbiturates poisoning
- Ethanol, Methanol
- Chloral hydrate
- Salicylate
- Theophylline
- Ethylene glycol
- Lithium

Useless / Contraindicated in

- BZD / Diazepam toxicity (High PPB)
- Propanolol (high / large volume of distribution)
- Kerosene poisoning
- Morphine
- Opium
- Organophosphorus poisoning
- Digoxin (Large volume of distribution)

[*Mnemonic :* Birthday Party Ka MOOD]

5. Hemo perfusion --- is considered in severe poisoning due to chloramphenicol, disopyramide, and hypnotic sedatives, phenytoin procainamide and theophylline. [CP_2DT]

6. CAUSES OF

Miosis / Constricted/Small pupil

- Old age (**M/c** cause)
- **Horner syndrome**
- **ARP**
- Barbiturates,BZD
- **Pontine hemorrhage**
- **Opiates** (Heroin, morphine)
- Sympathetic paralysis
- Metabolic encephalopathy (Small reactive)

[*Mnemonic :* B.M. SHAMPOO]

Mydriasis (Dilated Pupil)

- Anxiety (**M/c** cause)
- Childhood
- **Adie's pupil**
- Amphetamines, **cocaine**
- Cerebral death
- Psychedelics (LSD & Phencyclidine)
- Parasympathetic paralysis

[*Mnemonic :* $A_3C_3P_3$]

- ✈ *Descending paralysis is classically seen in botulism and diphtheria*
- ✈ *Sensory neuropathy is seen in HIV*
- ✈ *Predominently motor neuropathy are seen in --- Prophyria (M or SM), GBS (M, SM) & Lead (M > S or M) Amyotropic lateral sclerosis, poliomyelitis, Nm junction disorders*

7. Paralysis onset/progression

- **In poliomyelitis** onset of paralysis, acute ascending assymetrical flaccid paralysis (proximal > distal) is b/w 7-14 days . It takes 24-48 hrs from onset to full paralysis. There is areflexia (DTR lost) but pupils are normal.
- **In botulism** onset of paralysis b/w 1½-2½ days. There is acute descending symmetric flaccid paralysis (proximal > distal). Reflexes are normal or ↓. Pupils are dilated (mydriasis), diplopia, loss of accomodation.
- **In diphtheria** onset of paralysis is b/w 1-8 week.There is acute descending symetrical quadriplegia, areflexia, ophathalmoplegia, blurred vision, palatal paralysis.
- **In Lead intoxication** peripheral neuropathy mainly motor type (motor delays on nerve conduction). Wrist drop / foot drop (lead palsy)
- **In Arsenic intoxication** Chronic arsenic poisoning results in peripheral neuropathy.Sensory and motor polyneuritis, distal weakness is seen.

8. CHARACTERISTIC OF ARTHRITIS IN

SLE	RA	Psoriasis	Gout
Polyarticular	Polyarticular	pauci/oligo articular	monoarticular
MCP/wrist	MCP > wrist	involve PIP and DIP	MTP of great toe
Non-erosive	Erosive, painful	Painful	Erosive, painful

9. • **Gynecomastia is NOT seen with** ---**SCLC** (*Seen with large cell adeno Ca. of lung*)
   ---**Sarcoidosis.**
10. • **Hypercalcemia is NOT seen in** ---**Acute pancreatitis, Celiac d/s**
    ---**Myositis ossificans progressiva**
    ---**Tumour lysis syndrome**
    ---**Phenytoin therapy**

11. Histological Features of some Bullous (blistering) lesions

D/s	*Histology*	*Immunofluoroscence*
Pemphigus vulgaris	Acantholytic lesions **suprabasal** blisters	Fish -net pattern of IgG in epidermis, IgG deposites on keratinocytes
Pemphigus foliaceous	Blister involves superficial epidermis, stratum granulosum layer	IgG deposites on keratinocytes
Bullous pemphigoid	Subepidermal non- acantholytic blisters containing lymphocytic and eosinophilic infiltrates	Linear IgG ± C3 in epidermal BMZ
Epidermolysis bullosa aquisita	Subepidermal non- acantholytic blisters usually without leucocytic infiltrates. Autoantigen vs collagen-VII +nt	Linear IgG ± C3 in epidermal BMZ
Dermatitis herpétiformes	Neutrophilic microabscesses at dermal papillae, urticarial base	**Granular IgA** deposits of in dermal papillae (papillary dermis)

12. D/d of genital ulcers

	Syphilis	*Herpes*	*Chancroid*	*LGV*	*Donovanosis*
Ulcer	**Single** Large (5-15 mm) firm induration	Multiple 1-2 mm	Multiple excavated bleeds on touch, very painful	Usually **single** 2-10 mm non-vascular	variables red velvety firm indurated
LN	Firm, non-tender B/L	Firm, tender, usually B/L	Loculated usually u/L	Loculated, tender, usually u/L	**pseudo bubo**

Surgery

1. CYSTS

- **Congenital** – dermoids, thyroglossal cysts, urachal cysts
- **Acquired**

  Retention cysts ---Sebaceous cysts, Bartholin cysts, parotid/ breast cysts

  Distention cysts---Ovarian cysts, lymph cysts, colloid goiter

  Exudation cyst --- Hydrocele
- **False cysts**

  Have no epithelial lining (e.g. pseudocyst of pancreas, haematoma etc.)

2. SURGICAL INFECTIONS

- **Cellulitis**

  Non-suppurative spreading inflammation of subcutaneous and fascial planes mainly d/to *Strepcoccus pyogens*

- **Impetigo (Pyoderma)**

  Is a superficial infection of the skin caused mainly by group A streptococci

- **Erysipelas**

  Is spreading inflammation of skin and subcutaneous tissue d/to streptococcus pyogens

  [*Remember mnemonic - CIE (counter – immuno – electrophoresis) i.e. Cellulitis, Impetigo, Eryspelas are d/to stretptococcus pyogens.*]
- **Boil (Furuncle),Folliculitis**

  Is an acute staphylococcal infection of hair follicle with perifolliculitis
- **Hidradenitis suppurativa**

  Is chronic infection of apocrine sweat glands involving group of follicle.
- **Carbuncle**

  Infective gangrene of skin and subcutaneous tissue mainly d/to *staphylococcal infection. Commonly seen in diabetic and immunocompromised patient.*
- **Pott's puffy tumour**

  Diffuse external swelling in the scalp d/to subperiosteal pus a/w acute osteomyelitis of frontal bone.

3. M/c site in stomach

• Lesser curvature	:	M/c site for gastric ulcer (esp post. wall)
• Fundus	:	for *Ménétrièr's ds, Ca following pernicious anemia.*
• Body	:	Silent Ca, M/C site of Carcinoma
• Pylorus-antrum	:	M/C site of Linitis plastica

4. PEPTIC ULCERS

- *Curling ulcers are stress ulcers commonly occur with severe burns or trauma in proximal duodenum.*
- *Cushing ulcers are gastric, duodenal and esophageal ulcers arising in patient with intracranial surgery, injury or tumours. It carry high incidence of perforation.*
- *Duodenal ulcers bleed posteriorly.*
- *Peptic perforation occurs in the anterior aspect of duodenum.*

5. Urinary bladder and ureter

- **Golf hole ureter** --- is seen in TB of ureter
- **Thimble bladder** is seen in ---Tuberculous cystitis, and interstitial cystitis (no increased risk of carcinoma)
- **Hunner's ulcer** is seen in ---Interstitial cystitis
- **Teardrop bladder** *is seen in --- extraperitoneal rupture of bladder*
- **Kiss cancer of bladder** is *seen in --- benign papilloma of bladder*
- *Floating prostate is seen in--- membranous urethral injury.*

6. URETHRAL INJURIES

- Anterior urethra includes bulbar and pendulus, while posterior urethra includes prostatic and membranous part.
- Urethral injury is suspected in patient with *blood at meatus*, inability to void or penile edema.
  Classic triad in bulbar urethral injury is :
  Retention of urine + perineal hematoma + blood from external urethral meatus
- Occur more frequently **in males** because of the fixity to pubis.
- Urogenital diaphragm is the anatomical landmark that divides anterior (bulbar & pendulous) from posterior (prostatic & membranous) urethral injuries.

- Traumatic rupture of urethra **above the UGD** (rupture of prostatic urethra) leads to extravastation of urine in retropubic space > periprostatic, perirectal spaces (intrapelvic extraperitoneal collection of urine).

- Traumatic rupture of urethra **below the UGD** (rupture of membranous/ bulbous urethra) results in extravastation of urine into the superficial perineal pouch and this urine can spread to scrotum, penis, ant. abdominal wall.

- If the tip/ distal part of penile (spongiose) urethra ruptures and Buck's fasia intact extravastation is limited to penis only.

7. ANTERIOR V/S POSTERIOR URETHRAL INJURIES

Ant. urethral injury

- Usually results from blunt trauma such as a straddle injury (in which the bulbous urethra is crushed against pubic rami)
- Scrotal & perianal '**butterfly' hematoma** seen

Post urethral injuries

- 90% of P~ have simultaneous pelvic #

- *Anterior urethra includes bulbar and pendulus, while posterior urethra includes prostatic and membranous part.*
- ***Watercan perineum** is a c/c of recurrent periurethral abscesses after urethral strictures which ruptures on skin. A/w gonococcal infection*

8.Bladder rupture

M/c type of bladder rupture	----	*Extraperitoneal.*
M/c type of bladder rupture a/w pelvic #	----	*Extraperitoneal.*
M/c type of uretheral injury a/w pelvic #	----	*Membranous*
Uretheral injury leading to floating prostate	----	*Membranous*
M/c type of urethral injuries	----	*Bulbar*
M/c site of uretheral stricture	----	*Bulbar*
M/c cause of aquired uretheral stricture	----	*Instrumentation*

Obs and gynae

1. **Hormones**
   - *During normal pregnancy there is exponential rise in serum hCG levels and there is double peak*
   - *Relatively high (↑) hCG levels are seen in --- Fetus with Down syndrome (21 trisomy)*
   - *Abnormally high (↑↑) hCG levels are seen in --- Multifetal pregnancy (e.g. twin gestation), erythroblastosis fetalis a/w fetal hemolytic anemias, and molar pregnancy/ gestational trophoblastic d/s. (eg.> 1,00,000 mIU/ml at 15 wk gesta^{n} may be seen in choriocarcinoma)*
   - *↓hCG levels (plateauing) are seen in --- Ectopic pregnancy, abortion/ early pregnancy wastage*

2. **EMERGENCY CONTRACEPTION / post coital contraception ("Morning after" pills)**
   - Morning after pill was old term.
   - Emergency contraceptives prevent pregnancy by interfering with post ovulatory events and are therefore k/as **interceptives**
   - Oral pills are recommended within 72 hr of an unprotected intercourse. Following methods are used----

     1.***POP*** *(containing levonorgestrel 1.5 mg) are preparation of chioce* for postcoital contraception.

     2.Combined pills in double dose are also effective

     3. Estrogen in high dose

     4. Danazol : A/w androgenic S/E and is costly
   - Non-hormonal agents

     1. Mifepristone (RU-486) is effective upto 49 days of LMP
   - IUCDs --- Simplest method. Copper T 380A is highly effective upto 7 days after intercourse.

3. **Tubal Ligation**
   - M/c site of fallopian tube ligation for female sterlization is --- Proximal isthmus
   - Best recanalisation rate are seen in ---Isthmo-isthmic anastomosis as it gives best results in re-canalization procedures after reconstructive microtubular surgery (tubal ligation reversal)
   - Failure rate of Pomeroy technique is --- 0.1%
   - Least failure rates are seen with --- Bipolar coagulation

4. **Contraceptive of choice---**
   - *Oral contraceptive pill of choice for a lactating women --- Minipill (POP)*
   - *Contraceptive method of choice for a newly married couple --- Combined Oral pills*
   - *Contraceptive method of choice for a newly married couple of whom female is suffering from RHD --- Barrier methods*
   - *Contraceptive method of choice for post coital contraception --- POP (LNG containing)*

PREGNANCY SCALE

	0 hour	*fertilization (= day 14 after ovulation)*
	5th day-	blastocyst formation
Implantation 6th day --------- (It corresponds to the 20th day of regular menstrual cycle)	8 days -	**pregnancy c/b diagnosed** ***earliest by presence of β-hCG*** (= on 22nd day from LMP or day 8 post ovulation) using Radioreceptor assay or serum β-hCG
	9-10 days -	Pregnancy diagnosis by +nce of β-HCG on 25th day using radioimmune assay (urine PT)
	3 wk (21days)	Fetoplacental **circulation established**
		(LMP is used below)
FETAL DEVELOPMENT	4 wk	--- Gestational sac by vaginal ultrasound
↓	5 wk	--- Gestational ring
-	6 wk	--- Gestational sac,yolk sac, fetal poles
Cardiac pulsations ----------	7wk	—
Genotypes, Ovary/ testes distinguishable-----	8 wk	--- Embryonic movements
	9 wk	— CRL for gestational age gives best predictive value
	10 wk	—
	11 wk	⟶Chorionic villous sampling (CVS)/biopsy
Intestines in abdomen, finger,toes, skin,nails+	12 wk	--- Uterus at L/o pubic symphysis
Sex distinguishable externally, penis/ vagina	14 wk	
	15 wk	
Radiological e/o fetal skeletal shadow---------	16 wk	--- Quickening starts in multipara
		height of uterus midway b/n P.S. & umbilicus
2nd trimester screening for NTDs ⟶	18 wk	⟶ Quickening starts in primi
		Ideal time for USG screening of gross congenital anomaly
Surfactant synthesis starts, lanugo hairs+	20 wk	— Iron prophylaxis in pregnancy.
	22 wk	
Spinal cord extends to S1---------- --------	24 wk	--- Fundal height of uterus at L/o umbilicus
Eye opening ----------	26 wk	⟶ Universal screening for GDM by GTT
Fetal weight ~ 1000 gm ----------	28 wk	—
		⟶Prophylactic anti-D to all unsensitized Rh -ve women
	30 wk	
	32 wk	
	34 wk	
	36 wk	--- Uterus fundal height at L/o xiphisternum,
Term, maturity attained ----------37 wk		— Max^{m} volume of amniotic fluid
	38 wk	— **Engagement** in primi
	40 wk	— EDD
(age from LMP = gestational age)	42+ wk	— Post dated pregnancy

Ophthalmology

1. Investigations in ophthalmology

- *Slit lamp + contact lens is useful for examination of --- vitreous, aqueous, cornea, lens*
- *Slit lamp is the best investigation method for --- diagnosis of vitreous opacities*
- *Indirect ophthalmoscopy is best for visualization of fundus particularly periphery of retina (e.g. RD) upto ora serrata.*
- *Functional assessment of optic nerve is done by--- perimetry*
- *Ophthalmodynamometry is useful in differentiating CRVO from carotid artery emboli*
- *Visual testing in a child is done by ---- VEP, Preferrential looking behaviour e.g. Teller or Cardiffacuity cards and in verbal children by E-test, Landolt C test, STYCAR test etc*
- *Tests for acuity of vision are ---- Snellen's chart, Log MAR scale, ETDRS etc.*
- *Acuity for distant vision is tested by ---- Snellen chart*
- *Acuity for near vision is tested by ---- Jaeger type cards.*
- *Colour blindness / defect is tested by ---- Ishihara chart / plates (e.g. in d/s of macula or optic nv)*

2. Refractive Index and Refractive power

	Vitreous, aqueous	Cornea	Lens Cortex	Lens Nucleus	Lens Average
R.I.	1.33	1.37	1.38	1.40	1.39
Power		+40 D		(Max^{m} RI)	+17.75 D

- *Total refractive/ diopteric* ***power of eye is 58.5 D*** *(cornea 40 D + lens 17.75 D + physiological tone of ciliary muscle 1 D)*
- ***Maximum*** *refractive power ---- Anterior surface of cornea (47 D)*
- ***Maximum*** *refractive index ---- Centre of lens (1.40)*
- *Lens & cornea are avascular structures of eye. So fluoroscene angiography is not helpful in identifying lesions.*
- *Sclera is thinnest --- Behind the insertion of recti*

- Total axial length (AP diameter) of eye is -----24 mm in adults (But only 17.5 mm at birth)
- Depth of anterior chamber of eye: 2-3 mm.
- Length of optic nerve 4.7 - 5 cm
- Normal cup (.5 mm) & disc (1.5 mm) ratio is **1:3**
- Normal AV ratio in fundoscopy is **3:4**

3. Cornea

- *Loss of corneal sensations occur in —— Herpetic Keratitis, neuroparalytic keratitis, leprosy, absolute glaucoma*
- *Fascicular ulcer (ring ulcer) – is seen in Phlyctenular keratitis (e.g. in TB)*
- *Numular keratitis is seen in herpes zoster ophthalmicus*
- *Ulcer serpens – is pneumococcal hypopyon ulcer*
- *Conjunctival follicles (follicular conjunctivitis) is seen in trachoma, benign folliculosis, acute and chronic follicular conjunctivitis [Mnemonic : T-BACT]*
- *Angular conjunctivitis is typically caused by a diplobacillus Moraxella lacunata (sometimes by staph.)*

4. Cataract

- **In Wilson's disease** - Kayser-Fleischer rings are characteristic
  - Sunflower cataract at anterior capsule
- **In DM** - Snow flakes opacities develop all over the cortex giving a milky white Colour to the lens and Accumulation of sorbitol and fructose in lens.
- **In Myotonia dystrophica** - Posterior subcapsular stellate opacities in lens (Christmas tree pattern)
- **In Tetany** - Crystaline flakes opacities
- **In Galactosemia** - Dust like lenticular opacities & oil-drop cataract
- **In Down syndrome** - Multiple punctate / flake-like opacities and Brushfield's spots.
- **Complicated cataract** - Secondary to inflammation / degeneration (Iridocyclitis, choroiditis, high myopia, RD).
  - Polychromatic luster and rainbow vision is diagnostic sign.
  - Posterior cortical cataract and spreads in axial length.
  - Bread-crumb appearance.
- **Traumatic cataract** - A contusion injury may produce rosette-shaped cataract at the posterior cortex.
- **After Cataract** *(secondary cataract)* - Complication of ECCE
  - Ring of Sommering & Elsching's pearls seen.
  - Pupillary block glaucoma may occur because of membrane.

5. Intraocular Foreign Bodies

- **Chisel & Hammer**
  - Chips of iron and steel
  - Mc intraocular FB (90%)
- **Copper** — **Chalcosis**
  - KF rings (in descemet's membrane)
  - Sunflower cataract
- **Iron / Steel** — **Siderosis bulbi**
  - Ant. epithelium & lens capsule involved
  - Pigmentary changes in retina, V loss, mydriasis, sec. glaucoma

6. Drugs

- *Atropine & homatropine may precipitate --- Glaucoma in susceptible individuals*
- *Topical corticosteroids are indicated in T/t of --- Anterior uveitis*
- *Systemic corticosteroids are indicated in T/t of--- posterior uveitis*
- *C/c of prolonged t/t with topical steroids (chronic steroid drops) --- Glaucoma*
- *C/c of prolonged t/t with systemic steroids --- Cataract*
- Pulsatile swelling on peritonsillar region suggests --- Aneurysm of external carotid artery

ENT

1. **Imp. signs**
   - **Pulsatile tinnitus** is seen in --- Glomus tumour, palatal myoclonus
   - **Pulsatile otorrhea** is seen in --- ASOM
   - Fluctuating hearing loss is seen in---Meniere's disease
   - Light house sign is seen in - ASOM

2. MÉNIÈRE'S DISEASE

- Also k/ as **endolymphatic hydrops**
- More common in males. A/w syphilis
- Disorder of inner ear where the endolymphatic sac is dilated mainly affecting scala media (cochlear duct) and saccule
- *Cl/f*
  - Commonly affects 35-60 year males. D/s is usually unilateral
  - *Triad* of

    Episodic **vertigo** + u/L fluctuating/ episodic **deafness** (hearing loss) + **Tinnitus**

    There is also sense of fullness or pressure in the ear

- *Cl/tests*
  - **Tullio phenomena** (loud / noise produce vertigo d/ to distended saccule lying against the stapes footplate)
  - Recruitment (intolerance to loud / amplified sounds)
  - Diplacusis (distortion of sound)
- *Ix*
  - PTA show sensorineural hearing loss with loss of lower frequencies (**rising type curve**)
  - SISI score >70% (normal <15%)
  - Tone decay test >20 dB
  - Electrocochleography- SP/AP ratio >30%
- **T/t**
  - Vasodilators/ nicotinic acid, betahistine
  - Cawthorne's head exercises
  - Surgery (stellate ganglion block, vestibule neurectomy)

3. Otosclerosis

- Also k/as *Otospongiosis (active stage of otosclerosis)*
- AD inheritance.
- Ankylosis of the foot plate of the stapes due to new vascular spongy bone formation.
- **M/c** site of involvement - anterior edge of oval window (area of fistula anti fensetrum)
- **Cl/f** : Progressive, conduction deafness usually **B/L**. Paracusis willisii, tinnitus.
- *On otoscopy* --- TM is normal and mobile . **Schwartz sign** i.e. reddish hue or flemmingo pink reflex seen through the TM due to vascular otospongiotic mass. Blue Mantle of Mannose is also seen
- **TFT shows** –ve Rinne test.
- *On pure tone audiometry* loss of air conduction more for lower frequencies. *Carhart's notch* is dip in bone

conduction curve maximum at 2000Hz.

- D/s is more active during pregnancy.
- **T/t :**
  - Surgical – **Stapedectomy** with hearing aid (prosthesis replacement) is TOC.
  - Medical – Sodium fluoride used sometimes when Schwartz sign is +ve.

4. Nasal meatus

- *Chronic dacryocystitis & mucocele of lacrimal sac are treated by dacryocystorhinostomy;, in dacryocystorhinostomy lacrimal sac is drained in ---- middle meatus (via frontonasal duct)*
- *In Proof puncture / antral puncture maxillary antrum is punctured & drained through ---- inf. meatus*
- *In intra nasal antrostomy (for chronic suppurative maxillary sinusitis) opening is made in ---- inf. meatus*
- *Osteomeatal complex is an important landmark during FESS. It includes middle meatus+ uncinate process + ethmoidal bulla*
- *Chonca bullosa ---- pneumatized middle turbinate*
- *Drainage of nasal mucosa is caused by --- cilliary movements*

5. Paranasal Sinuses

- *PNS which are present (developed) at birth --- Maxillary and ethmoidal sinus*
- *Both the maxillary and ethmoidal sinuses are present at birth but* ***only the ethmoidal sinuses are pneumatized***
- *Order of development of sinuses (MESF) = maxillary → Ethmoid → Sphenoid → Frontal*
- *Radiologically , maxillary sinus c/b identified at 4-5 months, ethmoids at 1 year, sphenoid at 4 years, and frontals at the age of 6*
- *M/c site of sinusitis in children is --- maxilliary sinus*
- *For posterior ethmoidal sinus --- X-ray lateral oblique view from opp. side required*
- *All the sinuses are seen in lateral view.*
- *Onodi and Heller cells in relation to ethmoid sinus are located close to optic nerve and orbital floor.*

6.NASAL POLYPS

Antro- choanal polyp

- U/L backward
- Single, common in children
- Recurrence uncommon
- Mucosa of antrum prolapse after infection
- Not pre cancerous
- T/t : always **surgical**
  FESS or simple polypectomy (*avulsion*)
  by intra nasal approach
  ↓
  if recurrence
  ↓
  Caldwell Luc operation (maxillary antrum is opened sub-labially and through canine fossa and diseased mucosa is removed)
  [N.B. Caldwell Luc operation should not be performed before the age of 17yrs]

Ethmoidal polyp

- B/L, comes forward
- Multiple, old age
- Recurrence common
- Bernoulli's , allergy, vasomotor phenomena involved
- Pre cancerous
- T/t : usually **conservative**
  [histamine, steroids]
  Indications of surgery
  - If 1 or 2 pedunculated polyps present → Polypectomy
  - If multiple and sessile → Intranasal ethmoidectomy
    [Through middle meatus]
  - If again recurrence occur
    ↓
    Extra nasal/external ethmoidectomy

Orthopedics

1. Some important complications of # -

Non-union	Mal-union	Avascular necrosis
• # NOF	(# at the ends of a bone)	• Head of the femur (# NOF esp. sub- capital)
• # Scaphoid	• Colles #	• Proximal pole of *scaphoid* (# through the waist)
• # Lower 1/3 rd Tibia	• Supracondylar # of humerus	• Body of the *talus* (# through the neck)
• # Lower 1/3 rd Ulna	• Trochanteric #	
• # Lat. condyle humerus (FLUTS)		

- *Osteonecrosis of femur head is seen in SCD, Goucher's disease, Cassion's d/s, hemoglobinopathies*
- *Sites commonly affected in traumatic osteonecrosis are --- the head of femur, proximal scaphoid, post half of talus.*
- *Nonunion is commonly seen in cases in which avascular necrosis is common*

2. SITES OF # AND NERVE INJURY

Site	M/c nerve involved	Effect
• *Humerus #*		
# Surgical neck of humerus	Axillary n.	Deltoid paralysis with loss of shoulder contour
# Mid shaft/distal third	Radial n.	Wrist drop
Supracondylar elbow #	Median n.	Pointing index
Medial epicondylar #	Ulnar n.	*Claw hand*
• Dislocation of shoulder	Axillary / circumflex humeral n.	Deltoid paralysis
• Dislocation of hip (posterior)	Sciatic n.	Foot drop
• # Neck of fibula, knee dislocn	Common peroneal n.	Foot drop

3. Typical deformities in dislocations

Dislocation of joint	*M/c dislocation*	*Deformity*	*C/c or injury to*
• Shoulder	Anterior	Abduction	Axillary nv , axillary artery
• Elbow	Posterior	Flexion	Ulnar nv, brachial artery
• Hip	***Posterior***	F Ad IR	Sciatic
• Knee	Posterior	F, ER	Popliteal artery
• Ankle	Antero-Lateral	varus	Tibial a.
• Wrist	Lunate,		
• MP joint	Dorsal (index finger)		
• Spine	Cervical	Anterior displacement C5 over C6	
• Foot	Chopart's(Intertarsal) Lisfranc's (Tarsometatarsal)		

[Remember 3 'A' of anterior dislocation of shoulder--- Anterior, abduction deformity and axillary nerve injury]

4. Conditions a/w limitation (restriction) of abduction and internal rotation.

- Avasular necrosis
- Perthe's disease (esp. in flexion)
- Slipped capital femoral epiphysis (tendency to ↑ external rotation as hip is flexed)

5. Supratrochanteric shortening (Shortening of leg) is seen in -

- Dislocation of Hip (anterior / posterior)
- Central # dislocation of Hip (shortening but no rotation deformity).
- Destruction of femur head / acetabulum
- # NOF (intra-capsular)
- Coxa vara
- Malunited intertrochanteric #

→ *Shortening is maximum in --- Posterior dislocation hip & # shaft of femur*
→ *Shortening of limb is seen in --- Posterior dislocation hip & # shaft of femur, Tom Smith's arthritis*
→ *Apparent lengthning is seen in ---Obturator type of ant.dislocation of hip*

6. DISLOCATION OF HIP

3 types

■ **Posterior dislocation of Hip**

- **M/c** type
- Seen in young adults following high velocity trauma (RTA, dashboard injury, *motorbike* accident, bumper injury etc.) .Trauma is so severe that the patient will be brought in casualty on strature with severe pain
- LL may appear internally (medially) rotated, adducted and flexed . [Mn--FAdIR]
- There is **shortening** of limb (maximum)& risk of sciatic nerve damage

■ **Anterior dislocation of Hip**

- Is rare. Seen after severe trauma esp. **fall from tree** or road accident.
- LL appears externally (laterally) rotated, abducted & flexed in obturator type (or *extended in iliac/pubic type*)
- There is apparent lengthning & risk of femoral nerve damge

■ **Central # dislocation of Hip**

- Shortening but **no rotation deformity.** Both lower limbs remain parallel to each other
- Femur head can be felt on PR examination

6. Meniscal injuries

→ *Coronary ligament --- is **meniscotibial** component of medial collateral ligament*
→ *Tests for meniscal injury - Mc Murray's & Apley's grinding tests*
→ *Tests for collateral ligaments --- Apley's distraction test*
→ *Tests for cruciate ligaments (ACL, PCL) --- Lachman test is more reliable than ant/ post. Drawer test*
→ *Clinical test which is safer to be performed with ease in case of an acutely injured knee joint---Lachman test (because 90^0 flexion is not possible in acute cases)*
→ *MRI is imaging (or non-invasive) modality of choice in meniscal tear. Arthroscopy is diagnostic*
→ *It is wise to repair than remove the torn meniscus provided the tear involves---Outer third of meniscus (red-red zone); meniscocapsular junction.. These are vascular zones*
→ *Often the injury to medial collateral ligament, medial menisci & anterior cruciate ligament occurs together k/as Unhappy triad of O'Donoghue. Functional outcome is poor*

Pediatrics

1.Classic triad in congenital -

- **RUBELLA** --- Deafness (**m/c** manifestation) + cataract + mental retardation
- **SYPHILIS** --- Deafness + interstitial keratitis + Hutchinson's teeth (notched central incisors) & mulberry molars. *Also k/as Hutchinson's triad*
- **TOXOPLASMOSIS---** Chorioretinitis + intracranial calcification + hydrocephalus

- *M/c congenital infection a/w CNS calcification --- CMV > toxoplasmosis, herpes simplex.*
- *Commonest congenital infection is --- CMV (but it is usually asymptomatic)*
- *M/c congenital infection a/w fetal malformations is --- Rubella*
- *Recurrent abortions are a/w genetic /chromosomal anomalies, m/c autosomy 16, TORCH infections etc.*
- *Fetal malformations are **not** caused by maternal infections ---- HIV, HBV, Pox,malaria,etc.*
- *Recurrent abortions and IUGR are usually **not** seen in ---- Syphilis*
- *Sabin fieldman dye test is used to detect IgG in toxoplasmosis.*

2.. Syndromes a/w CHD

Syndromes	M/c CHD	Other defects
• Turner (44,XO)	CoA, bicuspid aortic valve	
• **Down's**	Endocardial cushion defects	ASD (primum type)
• Edwards (tri -18)	VSD	
• Patau (tri-13)	VSD	
• Holt Oram	ASD	VSD, 1^0 heart block
• Rubella	PDA	Peripheral PS
• Marfan	AR	
• DiGeorge	VSD + Interrupted aortic arch	
• Noonan's	Valvular PS	
• Allagile's	Peripheral PS	

- *M/c type of ASD are secundum type (10 : 1) but in Down's syndrome primum ASD are more common*
- *In Noonan's syndrome, pulmonary stenosis is of infundibular type.*
- *In TOF pulmonary stenosis may be infundibular, valvular & subvalvular (but **never** supravulvular type)*
- *In William's syndrome, aortic stenosis is supravalvar type.*
- *Lutembacher's Syndrome is congenital ASD + aquired MS (usually rheumatic)*
- *Small heart is seen in --- Constrictive pericarditis, addison's d/s, dehydration, cyanotic CHD, Malnutrition*
- *Infants of diabetic mother are likely to have --- VSD, asymmetric septal hypertrophy, cardiac anomalies*

3.Imp. Sporadic disorders

Association	Major CHD		Other
VATER Association	---	+	Vertebral anomaly,Anal arteria TE fistula,Radial, renal anomaly
VACTERL Association	VSD	+	VATER + **L**imb detect, '**C**' for cardiac defect
CHARGE Association	TOF	+	Coloboma, Choanal atresia, Mental retardation, Growth retardation, genito- Ear anomaly
William Syn.	Supravalvular AS		Elfin facies + Peripheral pulmonary stenosis + Hypercalcemia

4. Fallot's

- **Fallot's Trio logy is** --- ASD or Patent Foramen ovale + RVH + Pulmonary stenosis
- **Fallot's tetrology is** --- VSD (peri membranous) +Overriding of aorta + RVH + infundibular PS
- **Fallot's Pentalogy is** --- Fallot's Tetralogy+ ASD
- **Pink Fallot's is** --- VSD + Mild PS

5. CAH

- *21-hydroxylase deficiency is the **m/c** cause of ambiguous genitalia in the newborn & **m/c** cause of CAH.*
- *17- hydroxy progesterone (**17-OH-P**) in blood & urine is the most important screening test to diagnose and differentiate various forms of CAH*
- *Prenatal t/t of CAH is possible. At risk pregnant mothers are started with dexamethasone at 6 weeks of gestation f/b a CVS at 11-12 week to confirm sex of the fetus. Continue t/t only if the affected fetus is female, If fetus is male stop t/t.*

6. Imp. causes of hematuria

Streptococcal/ Post-infective GN	---	C3 low
IgA nephropathy	---	C3 normal
RPGN	---	fatal progression
SLE	---	ANA, ds DNA +ve . C3 low
Nephritic onset nephrotic syndrome	---	Massive proteinuria, high s. cholesterol
Alport	---	familial, deafness, lens dislocation
HUS	---	Bleeding, hemolytic anemia, thrombocytopenia

Radiology

1. Investigaion of Choice

CT SCAN (best for)

- Bronchiectasis
- Pancreas
- Adrenal
- Acute SAH

MRI

- For pituitary & hypothalamic & optic chiasma lesion cavernous sinus invasion
- Brain abscess
- For spinal lesions except vascular malformation of spine (for which myelography)
- Prolapse IVD
- ICSOL (esp. post. fossa mass lesions)

USG

- Pregnancy mass
- Gall stones

- *USG Abdomen :* to detect minimal ascites.
- *ECHO:* is investigation of choice to detect minimal pericardial effusion, MS
- *Angiography:* is investigation of choice for sequestration lung
- *MCU (Voiding cystourethrogram)*
  - For *posterior* urethra, PUV(posterior urethral valve), bladder neck (usually obstruction) in male.
  - To study bladder mechanism in stress incontinence
  - Recurrent UTI (but *not* for renal mass)

- *RUG:* Preferred for *anterior* urethra (but not done for posterior urethra)
- *Rapid sequence urography/ pyelography* - for reno vascular hypertension
- *Bead Cystogram for :* Stress Incontinence.

2. Imp. Barium meal Findings

String sign	---	*Congenital HPS*
Thumb print	---	*Ischemic colitis*
Inverted-3 sign of Frostberg & widening of C-loop of duodenum (Antral Pad sign)	---	*In Ca head of pancreas*

3. Imp. Barium Enema Findings

• Ca colon	—	Irregular filling defect, **apple core deformity**
• Ileocecal TB	—	**Pulled up caecum**, obtuse ileocecal angle, filling defect, incompetent ileocecal valve
• UC	—	Loss of haustrations, "lead pipe" appearance
• Crohn's disease	—	**String sign of Kantor**
• Colonic polyps	—	Smooth regular filling defect
• Hirschsprung's d/s	—	Narrow zone, zone of cone, dilated proximal segment.
• Diverticulosis of colon	—	**'Saw-tooth' appearance** , champagne glass sign.
• Ischemic colitis	—	**Thumb-printing sign**
• Intussusception	—	Coiled spring apperance, Claw sign clinically

4. Important findings vertebrae/ spine

- Picture frame vertebrae --- *In Paget's ds*
- Cod fish (biconcave) vertebrae --- Osteomalacia, osteoporosis, hyperparathyroidism
- Fish mouth vertebrae --- SCD, homocystinuria
- Calcification of IVD --- Alkaptonuria (ochronosii)
- Vertebrae plana --- Eosinophilic granuloma

→ *Rugger jersy spine is x-ray app. d/to sclerosis of upper and lower spinal borders seen in osteopetrosis, ORF induced osteomalacia, renal osteodystrophy.*

5. Calcification of IVD is seen in

- **Alkaptonuria** (ochronosis) --- m/c *cause*
- AS
- Pseudogout (CPPD deposition disease)
- Gout
- Hemochromatosis
- DISH

6. Intervertebral disc space

- **M/c** cause of single vertebral body collapse in a child with intact disc space is eosinophilic granuloma (single vertebrae plana)
- In metastasis --- disc space is preserved until late. Common in elderly, involves multiple vertebrae
- In Pott's ds --- ↓ disc space is the earliest sign in paradiscal type.

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